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The selection of auditor firms by companies in the new issue market

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Abstract

The paper provides some empirical evidence on the question of product differentiation in the market for audits. Using agency cost and signalling frameworks we posit that there will be a demand for varying levels of audit quality. Because audit quality is not directly observable to investors we postulate that quality will be proxied by the auditor's brand name reputation. Big Eight auditors are categorised as being high quality producers. Using data on companies newly listing on the New Zealand Stock Exchange we test the derived models of auditor choice. Auditor choice is a dummy variable (0,1) partitioned on the basis of non Big Eight and Big Eight accounting firms. The results provide support for the idea of product differentiation in the market for audits.

Key Words: Initial public offering (IPO), Auditor selection, Audit quality, Agency theory.

The Selection of Auditor Firms by Companies in the New Issue Market

Stock Exchange listed firms are required to have their financial statements audited by licensed accountants. The traditional view, and the one expounded by the major professional accounting bodies, is that the statutory audits performed on companies are homogeneous across audit firms. That is, an audit performed by one auditor will be as good as an audit performed by another licensed auditor. The reasoning for this assertion is that the audit must conform to generally accepted auditing standards and that auditors are professionally qualified individuals who have gained significant specified experience. In this context all public accounting firms are held to be of a uniform high quality in their role as auditors.

Recently several researchers have argued that there is product differentiation in the market for audit services and they have cited the occurrence of companies changing their auditors as possible evidence of such differentiation. In this literature the audit product is typically differentiated on the basis of 'quality'. DeAngelo (1981) defines audit quality as the joint probability of detecting and reporting material financial statement error and Titman and Trueman (1986) view audit quality as being the level of accuracy of information the auditor supplies to investors. Companies and their managers are viewed as requiring different levels of audit quality and that such services are handled by different firms of accountants. Arguments for the varying levels of audit quality can be made on agency grounds (Simunic and Stein 1987) and on signalling grounds (Titman and Trueman 1986). For example if a company's agency costs rise or are expected to rise then management has an incentive to mitigate these and one possible approach is the employment of a high quality auditor. Titman and Trueman (1986) using a signalling approach have demonstrated that an entrepreneur with favourable information about his firm's value chooses a higher quality auditor than an entrepreneur with less favourable information. The quality of the audit work performed and the status of the auditor's independence on the specific audit, are not, however, directly observable by external users of financial statements. Some limited recognition of quality and quantity (the amount of audit work) may be obtained from disclosure of the audit fee. However, more generally, the quality of an audit is considered, by those who believe in product differentiation, to be a characteristic of the accounting firm. In particular, arguments have been made to support the notions that larger accounting firms provide higher quality audits and that 'brand name' auditors provide higher quality audits.

DeAngelo (1981) contends that large accounting firms provide higher quality audits. She argues that client-specific quasi-rents flow to the incumbent auditors and that larger accounting firms, having more clients, have a higher opportunity loss from the performance of low quality audits. These large quasi-rents provide the incentive for the accounting firm to preserve independence and perform high quality audits. In contrast, Klein et al (1978) and Klein and Leffler (1981) developed a model which related product quality as a function of brand name reputation. Their argument is that firms spend considerable resources to establish a reputation for high quality (regardless of the size of the firm), earn quasi-rents from the brand name, and have an incentive to maintain high quality in order to retain their reputation. The importance of reputational signalling has been illustrated by Wakeman (1981) on the reputations of bond rating agencies, Mayers and Smith (1982) on the use of corporate insurance to guarantee contractual performance, Gilson and Kraakman (1984) on the reputations of investment bankers, and Downes and Heinkel (1982) and Booth and Smith (1986) on the reputation of underwriters.

There appears to be a measure of acceptance that the Big Eight accounting firms are the 'brand name' auditors in much of the English speaking world (Steven, 1981). The Big Eight are also the largest firms. In this study the Big Eight firms are regarded as the high quality producers; they satisfy the criteria of DeAngelo (1981) and Klein and Leffler (1981).

The purpose of this paper is to examine the selection of auditors by companies seeking a stock market listing on the New Zealand Stock Exchange. A model of auditor selection based on agency theory and signalling arguments is developed and tested. In particular, the study examines hypotheses suggested by Chow (1982), Simunic and Stein (1987), and Francis and Wilson (1988) in their work on U.S. data.

The new issue market provides a useful place to examine the question of auditor selection. Firstly, many new listing companies have no prior commercial history and hence no existing auditors; thus a choice of auditor has to be made. We might note here that the sponsors of the new issue (stockbrokers, underwriters, investment bankers) may have a significant input into the selection of an auditor. Also, of those firms that do have a prior history, many change their auditors at the time of stock market listing. A second reason for examining the new issue market is that the companies going public are usually small enough in size not to necessitate the use of a multi-office large accounting firm; thus smaller audit firms are not automatically ruled out of consideration on technological or efficiency grounds. Thirdly, new issue companies potentially experience large increases in agency costs and auditor selection will therefore

be predicted, at least partly, on the basis of reducing these costs. Fourthly, information asymmetries between management and potential stockholders are likely to be exaggerated in the case of new issues and the choice of auditor could reduce the uncertainties faced by investors. It can be argued that auditor credibility is even more important for newly listing companies than for older, larger and more established public corporations. For example, the limited history (or complete lack thereof) and the limited alternative sources of information on a new listing company, may enhance the importance of the auditor name, and therefore of auditor selection.

HYPOTHESES RELATING TO PRODUCT DIFFERENTIATION IN THE MARKET FOR AUDITS

Our contention is that audits are product differentiated on the basis of quality and the Big Eight accounting firms are perceived to produce high quality audits. This definition is consistent with that adopted by Balvers McDonald and Miller (1988), Beatty (1986), Ettredge, Shane and Smith (1988), Francis and Wilson (1988), Johnson and Lys (1990), and Simunic and Stein (1987) in their empirical studies based on U.S. data. For purposes of the empirical tests which follow, the Big Eight accounting firms are assigned a value of one and the non Big Eight are assigned a value of zero. In some of the following analyses the auditor classification is used as the dependent variable and in other tests the auditor classification is used as one of the independent variables.

Agency theory suggests that bonding and monitoring costs will be higher for those companies whose management have a relatively low level of share ownership in the company (Jensen and Meckling 1976). This is because the self interests of management with a low level of share ownership will likely diverge from those of the outside shareholders. Agency theory also suggests that companies with higher debt to equity ratios (i.e. more highly levered) will have higher bonding and monitoring costs. This leads us to conclude that newly listing companies with low management shareholdings and who have high debt to equity ratios have potentially higher agency costs and that they will therefore have a demand for a higher quality audit (so they can reduce these agency costs). The hypotheses are expressed as:

H1: The probability of a company using a Big Eight auditor increases with the percentage of common stock ownership held by non-managers after completion of the sale of stock in the new issue.

H2: The probability of a company using a Big Eight auditor increases with the ratio of debt of equity that exists after completion of the new issue.

These hypotheses are consistent with those suggested by Chow (1982), Simunic and Stein (1987), and Watts (1977).

A substantial number of new issues consist of brand new companies with no prior trading history, for example companies engaged in oil or mining exploration. Others are formed to acquire a number of existing businesses (examples include property companies, agricultural-horticultural companies, financial conglomerates). Because of the lack of a track record the riskiness of such companies' future cash flows is likely to be greater than for established firms and their market valuation will be intrinsically more difficult to estimate. Firm's with little or no prior operating history are characterized by substantial information asymmetries between managers and potential investors and this will lead to a signalling demand for reputable auditors. We hypothesize that new issue companies with a limited trading history will engage high quality auditors in order to add reliability to the share offer.

H3: The probability of a company using a Big Eight auditor decreases with the age of the new issue company.

Hypotheses H1, H2, and H3 are tested using the auditor variable as the dependent variable.

The underwriters of the new issue have an incentive for the issue to be fully sold and for the representations contained in the prospectus to be 'accurate'. If the first requirement is not met then the underwriter will face costs associated with the under subscription; failure of the second requirement potentially could lead to expensive lawsuits over untrue representations. The underwriter therefore has an interest in the credibility of the new issue and may have a preference for a Big Eight auditor [1]. If the marginal benefits of increased audit quality to the underwriters exceed the marginal benefits to the managers then we might expect to see the underwriters attempting to induce the managers to hire a higher quality auditor. One form that the inducement might take is

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1 A Big Eight auditor may give greater assurance to the underwriter for more 'risky' issues where risk is the probability of the issue being undersubscribed and the risk of the individual stock return. Additionally, the relatively wealthy Big Eight auditors may share some of the risk (with the underwriter) if lawsuits occur relating to the prospectus information (Antle 1982).

that the underwriter will reduce the commission rate if a high quality auditor (proxied by a Big Eight firm) is employed. The formal hypothesis is:

H4: The commission rate charged by an underwriter decreases if the auditor is a Big Eight firm.

Hypothesis H4 is tested using the auditor variable as an independent variable.

PROFITS FORECASTS AND AUDITORS

Many new issue prospectuses contain forecasts of future profits and dividends for at least one year ahead. Such forecasts can be used by investors in valuing the business (for example, via price earnings ratios, dividend yields, return on capital employed statistics, cash flow analyses) and in deciding whether to invest. In New Zealand such forecasts, if provided, have to be 'audited' as regards accounting policies and conventions. It is conceivable that investors place greater reliance on the forecasts if the auditor is perceived as being of high quality. There is some support for this notion in the accounting literature; for example, Balvers, McDonald, and Miller (1988) state that a higher reputation auditor (the Big Eight firms are used as high reputation auditors in their empirical analyses) reduces uncertainty concerning earnings and lowers the variance of the earnings estimate. In order to see if profits forecast accuracy is associated with the Big Eight - non Big Eight auditor classification the following hypothesis is tested:

H5: Superior profit forecast accuracy is associated with Big Eight auditors.

The forecast accuracy is measured by a variety of error metrics, these being mean forecast error, mean absolute forecast error, and mean squared forecast error.

DATA

The sample data is constructed from new issues made on the New Zealand Stock Exchange in the four years 1983 to 1986. These companies were either existing companies who were making a public issue of their shares (for cash consideration) or were new companies who were raising finance to begin business. For the existing company group, the major reason for coming to the stock market was to raise finance for

expansion; a secondary reason in some cases was that existing shareholders could sell some of their shares more easily (either at the time of the new issue or in the market subsequent to listing). New companies tended to be those engaged in oil or mineral exploration, those engaged in investment finance, and those who formed a holding company which intended to acquire existing businesses. The total population of issues during the four year period came to 103 and these provided the data for the study. Prospectuses for these firms were collected and these provided information on the test variables.

The Securities Act 1978 and subsequent amendments provides legislation regarding the raising of finance and the content and form of prospectuses. Each company is required to have an auditor. In addition if the prospectus contains a profit forecast the auditor must certify that "In our opinion the forecasts, so far as the accounting policies and calculations are concerned, have been properly compiled on the footing of the assumptions made or adopted by the issuer set out at pp .... of this prospectus and are presented on a basis consistent with the accounting policies adopted by the company (group)" (Clause 42, First Schedule, Securities Regulations) [2]. The auditor is therefore involved, to some degree, in the prospectus work as well as being the appointed auditor for future financial statements. Although the auditor's work on the prospectus is based on the assumptions made by the issuer, those accounting firms with substantial reputational capital at stake are unlikely to provide certification for the prospectus forecast unless they have confidence in the underlying assumptions made by management. Investors recognise this and hence they are hypothesized to place more reliance on profits forecasts that are associated with a Big Eight auditor. Most prospectuses in the sample did contain a profits forecast. Those companies which did not produce a forecast were in the oil or mineral exploration businesses.

(Insert Figure 1)

Figure 1 lists the variables used in the study. The variables INSIDE, LEVER, FEE, AGE, and AUDIT are used as test variables for hypotheses 1 to 4. SIZE, RAISED, OIL, and UW are used as control variables. RAISED is the amount of cash raised via the new issue and it is positively correlated with the SIZE variable. The variable RAISED represents the amount of capital that the underwriter is guaranteeing; all the underwriting contracts were of a firm commitment type. A significant number of new issues consisted

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2 See Commerce Clearing House (1986).

of companies engaged in oil or mineral exploration and these firms, designated OIL, may have an impact on auditor selection although the direction is difficult to predict.

Previous studies have hypothesized that the prestige of the investment banking firm/underwriting firm is an important variable in the unseasoned new issue market. In particular Beatty and Ritter (1986) and Balvers, McDonald and Miller (1988) argue for highly reputable investment bankers being associated with a lower level of underpricing. Balvers McDonald and Miller (1988) and Simunic and Stein (1987) also discuss the influence that investment bankers/underwriters have on the choice of auditors. The variable UW was therefore constructed to differentiate between high prestige investment bankers/underwriters and others. As there is no published ranking of investment bankers/underwriters in New Zealand a subjective assessment was made of high prestige firms and others. The assessment was based on examining which firms had a long and frequent involvement in investment banking/underwriting and from discussions with a stockbroking firm. Prestige investment bankers/underwriters are identified in Figure 2. UW is given a value 1 if the investment banker/underwriter is classified as being prestigious, otherwise zero.

(Insert Figure 2)

The variable PREM represents the level of underpricing for a new issue. Underpricing is defined as the percentage change in price on the first day of trading; that is (Closing Market Price first day of trading - Issue Price)/Issue Price. The PREM variable is used in tests which examine whether the quality status (Big Eight, non Big Eight) of auditing firms has any association with the level of underpricing.

RESULTS

(Insert Table 1 & Table 2)

Table 1 shows descriptive statistics for the variables, classified by the Big Eight - non Big Eight auditor dichotomy. Also shown is a 't' test and a Mann Whitney test for differences in means across the auditor category. The univariate analyses showed significant differences between Big Eight and non Big Eight auditors in terms of managerial shareholdings and leverage. Table 2 shows the correlation matrix of the variables used in the study. The table shows that the simple correlations are small and at this level there is no evidence of substantial multicolinearity problems.

Auditor Selection

Hypotheses H1, H2 and H3 are tested using a logic model regression of the dummy AUDIT variable on a set of independent variables including INSIDE, LEVER and AGE. The logic model overcomes the heteroskedasticity problems associated with ordinary least squares regression using a dichotomous dependent variable by transforming the variable so that it has an underlying continuous distribution. The maximum likelihood estimators of the logic model are consistent and have a known sampling distribution, thus allowing significance tests of the independent variables (Maddala 1983).

The model testing H1, H2 and H3 is of the form:

$$AUDIT = B_0 + B_1\,SIZE + B_2\,AGE + B_3\,UW + B_4\,INSIDE + B_5\,LEVER + B_6\,OIL$$

where AUDIT is the binary auditor choice variable and SIZE, OIL and UW are included as control variables. The results of the logic regression are shown in Table 3.

(Insert Table 3)

The chi-square statistic indicates an overall satisfactory fit, being significant at the .01 level. The coefficients on the INSIDE and LEVER variables are both statistically significant and have the expected signs suggested by hypotheses H1 and H2. That is, the lower the percentage share ownership that management have in the company, the greater the demand for a Big Eight auditor, and the higher the leverage the greater the demand for a Big Eight auditor. In contrast, Simunic and Stein (1987) found only weak support for the management shareholdings hypothesis and counter evidence for the debt-equity hypothesis. Their study showed a significant and negative relationship between the employment of a Big Eight auditor and the debt-equity ratio. Francis and Wilson (1988) also found a negative relationship between the debt-equity ratio and the employment of a Big Eight auditor. The evidence provided by Table 3 supports the idea of potentially higher agency costs, induced by lower management shareholdings and higher debt equity ratios being associated with a demand for high 'quality' audits (where high 'quality' is proxied by a Big Eight firm of accountants). The negative sign on the AGE variable supports the notion of companies with little or no prior trading history using the service of a Big Eight auditor. Thus hypothesis H3, based on signalling arguments, is supported by the data.

Underwriter Fee and Auditor Choice

To test H4 the following regression was run :

$$FEE = B_0 + B_1\ AUDIT + B_2\ OIL + B_3\ AGE + B_4\ RAISED + B_5\ INSIDE + B_6\ UW + B_7\ LEVER$$

The variable OIL is added as a control variable. INSIDE, LEVER and AGE are added as they are measures of potential agency costs and signalling of the variability of future cash flows. UW is a control variable representing prestige of the investment banker/underwriter. The variable RAISED is used as this is the amount of capital that the underwriter is guaranteeing. Simunic and Stein (1984) hypothesize a negative relationship between FEE and RAISED because of an economies of scale argument. However, it could be equally argued that a positive relationship could exist because undersubscriptions of a large issue may lead to disproportionately large losses due to the underwriting. The expected sign on the RAISED variable is therefore indeterminate.

(Insert Table 4)

The results of the regression are shown above in Table 4. The coefficient on the AUDIT variable is statistically significant and negative thus confirming the hypothesis of underwriters lowering their fees if a Big Eight auditing firm is employed. The RAISED variable had a significant and negative coefficient signifying that the greater amount of finance raised the lower the underwriter fee; this provides evidence for an economies of scale argument in providing underwriting services. INSIDE and LEVER variables are also significant. The negative sign on INSIDE indicates that the higher the percentage of shares in the company owned by the managers, the lower the underwriting fee. The positive sign on LEVER shows that the greater the financial leverage the higher the underwriting fee. The signs on the two variables are consistent with underwriters believing that higher leverage and lower management ownership will reduce demand for the stock and thus will increase the probability of the underwriter having the take up part of the issue. The R^2 of .25 indicates a moderate fit and F-statistic was significant at the .01 level. The evidence from Table 4 provides support for the notion that the use of a Big Eight auditor is associated with a low underwriting fee being charged. This in turn is consistent with the underwriter compensating the new issue sponsors for hiring a Big Eight auditor.

PROFIT FORECASTING ACCURACY

(Insert Table 5)

Table 5 shows the profit forecast error metrics. The mean errors were far larger for the Big Eight grouping. The MFE shows that the profit forecasts made by companies with a Big Eight auditor exceeded the actual profits by a substantial amount. These metrics were heavily influenced, however, by just a few 'outlier' companies and the statistical tests of differences between the Big Eight and non Big Eight were not significant. For example, one company forecast a profit of $15,000 and actually made a loss of $1,844,000. This resulted in a forecast error of -12393%. The mean forecast errors were recalculated after deleting those 'outliers' who had error in excess of 1000%. The mean forecast error of those companies audited by a Big Eight auditor became -2.9% (compared to -134% in Table 5) and the differences between the Big Eight and non Big Eight auditors were not statistically significant. Similar conclusions were derived when using the mean absolute forecast error (MAFE) metric and the mean squared forecast error (MSFE) metric. The evidence from the tests of profits forecast accuracy do not provide any statistically significant support for H5. That is, the Big Eight auditor grouping is not associated with superior profit forecasting accuracy.

ISSUE PRICE, INITIAL LISTING PRICE, AND AUDITORS

In deciding whether to invest in a view issue, prospective stock holders are concerned about future share price performance and especially the initial listing price (which represents the first opportunity to realize their investment). If Big Eight auditors give more credibility to a company coming to the new issue market then, ceteris paribus, we might expect to see comparatively few 'losses' or negative returns from the issue price to the initial listing price. In order to examine this, an analysis was made of the percentage of new issues which recorded negative stock returns classified on the basis of the auditor being a Big Eight member or not. The number of losses came to just seven issues and the proportion of losses associated with Big Eight auditors was approximately equivalent to the proportion of losses associated with non Big Eight auditors. The small number of negative return cases prevented any meaningful statistical analyses. Additionally, the activities of underwriters and other promoters of the new issues in 'supporting' the initial listing prices is difficult, if not impossible, to ascertain and hence to control for.

An analysis of the underpricing of new issues was also undertaken. Prior research by Balvers, McDonald and Miller (1988) argued that Big Eight auditors were associated with lower underpricing and their empirical results provided support; in contrast Beatty (1986) was unable to identify a significant relationship between auditor reputation and the underpricing of new issues. The research design involved regressing the level of underpricing against AUDIT, SIZE, UW and UWAU. Underpricing (denoted by the variable PREM) is defined as the percentage change in price on the first day of trading; that is, (Closing Market Price - Issue Price) / (Issue Price). Balvers, McDonald and Miller (1988) found that there was an interaction between the investment banker and the auditor when modelling the level of underpricing in the new issue market. In order to examine whether such an interaction was significant in the present study, the variable UWAU was constructed. The occurrence of a prestigious investment banker/underwriter (UW = 1), together with a Big Eight auditor (AUDIT = 1), gives a value of one to UWAU. If either or both of UW and AUDIT takes on a dummy value of zero then UWAU = 0. The results of the regression are shown in Table 6. Only the investment banker/underwriter variable was significant with high prestige firms being associated with a lower level of underpricing. Neither AUDIT nor UWAU were statistically significant at the a = .10 level. Thus the current study did not confirm the findings of Balvers, McDonald and Miller (1988) in their study based on U.S. data.

(Insert Table 6)

CONCLUSIONS

The paper set out to examine the rationale for product differentiation in the market for audits and to test the resulting hypotheses on auditor choice in the new issue market. It is hypothesized that audits differ on the basis of quality and, following the work of Simunic and Stein (1987) among others, that accounting firms belonging to the Big Eight categorisation are perceived as providing high quality audits. The product differentiation model argued that different levels of audit quality would be demanded by companies depending upon their ownership structure and financial leverage. When agency costs are high, management and the underwriters are likely to desire a higher quality audit in order to add more credibility to the financial statements and to the prospectus. Additionally, signalling arguments (Titman and Trueman 1986) based on information asymmetries between management and outside investors, can be made for quality differences in auditing. Because users of financial statements cannot directly observe the effectiveness of the audit we argue that this quality will be inferred from

brand name reputation. Further, such reputation will be more important and will have more differential impact on investors, when there are potentially large agency costs and informational asymmetries present.

The empirical results support the hypothesis of product differentiation in the market for audits. Table 3 provides evidence which supports hypotheses H1 and H2. That is, the higher agency costs, implied by low managerial shareholdings and high leverage, result in or are associated with companies choosing a Big Eight auditor. Table 3 also suggests that companies with little or no trading history desire a Big Eight auditor in order to add credibility to the issue; this finding is consistent with a signalling argument for quality audits.

The fourth hypothesis relates to the impact of auditor brand name on underwriter commission rates. A negative and significant relationship was found between these variables. Such a relationship is consistent with the idea that the underwriter's uncertainties are reduced if the auditor is highly reputable, and the underwriter is therefore prepared to compensate the managers, via lower commission rates, for the more costly audit (assuming a Big Eight audit is more costly). The finding is also consistent with the underwriter believing that a Big Eight auditor is better able to share the risk involved in a new issue (because of their greater wealth) and hence they (the underwriter) induce the managers to hire a high reputation auditor.

No evidence was found to support the hypothesis that Big Eight auditors were associated with companies who made the most accurate profits forecasts. Although auditors are required to report on profit forecasts appearing in prospectuses the accuracy of the forecasts appeared to be independent of the Big Eight - Non Big Eight classification. Finally the level of underpricing in the market for new issues did not appear to be dependent on the auditor grouping.

Figure 1
Description of Variables

Variables	Description
SIZE	Gross assets after the new issue.
RAISED	Amount of cash raised via the new issue.
INSIDE	The percentage of shares in the company effectively owned by managers after the issue [3].
LEVER	The ratio of book value of debt to gross assets after the issue.
AGE	The number of years the company had been in existence.
OIL	A dummy variable taking a value of one (1) if the company was in the oil or mineral exploration business, otherwise zero.
FEE	The underwriting fee percentage charged by the underwriters. This represents the fee as a percentage of the cash raised in the issue.
AUDIT	A dummy variable taking the value one (1) if the auditor is a Big Eight firm [4], otherwise zero.
UW	A dummy variable taking the value one (1) if the investment banker/underwriter is a prestige firm (see Figure 2), otherwise zero.
PREM	Underpricing. It is defined as (Closing Market Price first day of trading - Issue Price)/Issue Price.
UWAU	A dummy variable taking the value one (1) if UW = 1 and AUDIT = 1, otherwise zero.

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3 Managers are taken to be the directors of the company. The shareholdings of the director, the director's family, and companies or trusts associated with the director, are included in the numerator of the variable INSIDE.

4 The Big Eight auditing firms are Arthur Andersen, Arthur Young, Coopers and Lybrand, Deloitte Haskins and Sells, Ernst and Whinney, Peat Marwick Mitchell, Price Waterhouse, and Touche Ross.

Figure 2

Prestigious Investment Bankers/Underwriters

Buttle Wilson

DFC

Fay Richwhite

Francis Allison and Symmes

Frank Renouf

Jarden

Jordan Sandman Smyth

NZI

Renouf Partners

South Pacific Merchant Finance

TABLE 1

Descriptive Statistics for Sample Partitioned by Audit Category

Variable	Big Eight (n = 76)	Non Big Eight (n = 27)	Two-Tailed Probabilities Mann Whitney	t
SIZE	$17.009m ($20.289m)	$13.248m ($16.060m)	0.2118	0.386
AGE	3.724 years (10.030 years)	6.259 years (12.972 years)	0.0636	0.300
INSIDE	23.697% (20.739%)	44.444% (19.094%)	0.0000	0.000
LEVER	27.91% (20.56%)	14.89% 16.07%)	0.0061	0.004
RAISED	$9.520m ($13.691m)	$5.533m ($6.938m)	0.0402	0.151
FEE	1.87% (4.66%)	2.21% (3.82%)	0.0026	0.001
UW	0.54 (0.50)	0.44 (0.51)	0.3984	0.401
PREM	33.83% (38.87%)	27.81% (43.65%)	0.1854	0.505

Means are show first followed by standard deviations (in parentheses)

TABLE 2

Correlation Matrix of Variables

	SIZE	AGE	OIL	LEVER	INSIDE	AUDIT	RAISED	FEE	UW
SIZE	1.00	0.31	-0.11	0.14	0.20	0.09	0.66	-0.20	-0.03
AGE		1.00	-0.11	0.18	0.11	-0.10	0.04	0.05	-0.08
OIL			1.00	-0.21	-0.15	0.03	0.03	-0.05	0.02
LEVER				1.00	0.21	0.28	-0.17	0.11	0.11
INSIDE					1.00	-0.41	-0.09	0.02	0.07
AUDIT						1.00	0.14	-0.32	0.08
RAISED							1.00	-0.31	0.00
FEE								1.00	0.03
UW									1.00

TABLE 3

Logistic Regression of Auditor Choice

Variable	Coefficient	Standard Error	Asymptotic t-ratio
INTERCEPT	5.75	0.33257	17.28592
SIZE	0.00315	0.00140	2.24489
U W	0.44795	0.32905	1.36137
OIL	-0.03974	0.52216	-0.07610
INSIDE	-0.04673	0.01072	-4.36081
LEVER	0.04225	0.01113	3.79511
AGE	-0.03186	0.01488	-2.14144

$X^2 = 205.564$ p level = .000

Correlation between actual and predicted = .697

Correlation squared (R^2) = .486

TABLE 4

Regression of Underwriter Fee on Auditor Selection
and other Independent Variables

Variable	Coefficient	Standard Error	t-ratio	p level
INTERCEPT	23.939984	1.301281	18.397	.0000
AUDIT	-5.016482	1.186197	-4.229	.0001
OIL	-0.365566	1.517651	-0.241	.8102
U W	0.561533	0.843162	0.666	.5070
RAISED	-0.008439	0.003515	-2.401	.0183
AGE	-0.007389	0.039869	-0.185	.8534
INSIDE	-0.054436	0.022453	-2.424	.0172
LEVER	0.059189	0.024824	2.384	.0191

F - statistic = 4.5380 Significance level F = .0003

R^2 = .24709

TABLE 5

Profit Forecast Error Metrics

Variable	Big Eight	Non Big Eight	One-Tailed Probabilities	
			Mann Whitney	t
MFE	-134.0	-9.2	.4530	0.345
	(1702.9)	(162.9)		
MAFE	437.3	113.5	.2085	0.144
	(1650.3)	(115.2)		
MSFE	286.8	2.5	.2085	0.220
	(2000.0)	(4.3)		

Means are shown first followed by standard deviations (in parentheses)

MFE: mean forecast error computed as $\left(\frac{\text{actual profit - forecast profit}}{\text{forecast profit}}\right) \times 100$

MAFE: mean absolute forecast error computed as the absolute value of MFE

MSFE: mean squared forecast error computed as $\left(\frac{\text{actual profit - forecast profit}}{\text{forecast profit}}\right)^2$

Actual profits and forecast profits were those for the first year of the company's existence (since listing).

TABLE 6

Regression of Underpricing on Auditor Selection
and other Independent Variables

Variable	Coefficient	Standard Error	t-ratio	p level
INTERCEPT	39.126701	9.755434	4.011	.0001
AUDIT	5.046121	11.509234	0.438	.6620
SIZE	0.017750	0.020122	0.882	.3799
UW	-31.285585	15.157352	-2.064	.0417
UWAU	6.515205	17.331874	0.376	.7078

F statistic = 3.41537 Significance level = 0.0117

$R^2 = 0.12235$

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